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EXAMINER

HSU, JONI

ART UNIT

PAPER NUMBER

2676

12

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/691,794

Applicant(s)

KAMEN ET AL.

Examiner

Joni Hsu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>4-8</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 4-8 and 12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

3. Claims 4 and 6 recite the limitation "the first group". There is insufficient antecedent basis for this limitation in the claims.

Claim 5 recites the limitation "the second group" and "the first group". There is insufficient antecedent basis for this limitation in the claim.

Claim 7 recites the limitation "the second group". There is insufficient antecedent basis for this limitation in the claim.

Claim 8 recites the limitation "the second group" and "the first memory". There is insufficient antecedent basis for this limitation in the claim.

Claim 12 recites the limitation "the first memory size". There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 10-14 are rejected under 35 U.S.C. 102(e) as being anticipated by Wishoff (US006300962B1).

6. With regard to Claim 10, Wishoff describes a method comprising the graphic application requiring a certain amount of graphic memory for the video data (234, Figure 6; Col. 5, line 64-Col. 6, line 2). According to the disclosure of this application, digital images, or video images, are considered to be texture maps (page 12, line 20). Therefore, Wishoff describes that the graphic application inherently computes a total size of a set of texture maps. Wishoff describes comparing the total size of the set of texture maps with a memory size (237, 238; Col. 6, lines 14-31). First, the memory manager allocates available contiguous video memory (235, Figure 6; Col. 6, lines 2-7). If the total size of the set of texture maps is larger than the memory size (238, 242; Col. 6, lines 25-35), or greater than the available contiguous video memory, then the memory manager reallocates the video memory into non-contiguous video memory, so it divides

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the set of texture maps into at least two groups. Wishoff describes a best fit memory allocation scheme, which involves finding the piece of memory closest to the size of the allocation request (237, Figure 6; Col. 6, lines 14-24). Therefore, the total size of the texture maps in the first group is the largest possible sum of texture map sizes for which the total size of texture maps in the first group is less than the memory size.

7. With regard to Claim 11, Wishoff describes that a graphic application requires a certain amount of graphic memory (234, Figure 6; Col. 5, line 66-Col. 6, line 2), and inherently, this amount of graphic memory is needed to store a total size of the set of texture maps, which is a sum of all texture map sizes, and the graphic application computes this total size.

8. With regard to Claim 12, Wishoff describes storing the set of texture maps in a first memory if the total size of the set of texture maps is less than or equal to the first memory size (235, Figure 6; Col. 6, lines 2-7).

9. With regard to Claim 13, Wishoff describes storing a first group of texture maps in a first memory (235, Figure 6; Col. 6, lines 2-7).

10. With regard to Claim 14, Wishoff describes allocating available contiguous video memory (235, Figure 6; Col. 6, lines 3-7) using a best fit memory allocation scheme (237; Col. 6, lines 14-24), as discussed in the rejection for Claim 10. After performing this step, if sufficient video memory does not exist (238; Col. 6, lines 25-32), or there are still texture maps that do not

fit into the available contiguous video memory, then the memory manager reallocates video memory (242; Col. 6, lines 32-35) to non-contiguous video memory, or into two separate groups of memory. Therefore, a second group of texture maps is stored in a second memory.

11. Thus, it reasonably appears that Wishoff describes or discloses every element of Claims 10-14 and therefore anticipates the claims subject.

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

14. Claims 1-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wishoff (US006300962B1) in view of Leftwich (US 20030037336A1).

15. With regard to Claim 1, Wishoff describes a system comprising a memory analyzer (50, Figure 2) for analyzing set-top box layout (Col. 1, lines 9-12) and indicating available memory types (Col. 2, lines 59-65; Col. 6, lines 3-7), the memory analyzer being coupled to a memory distributor (104, Figure 3), the memory distributor for distributing texture maps (Col. 3, lines 34-63).

However, Wishoff does not teach a data filter coupled to a text-to-image converter for converting filtered data into a set of digital images, the set of digital images being defined as a set of texture maps. However, Leftwich describes a system comprising a data filter [0028]. The data is filtered by the cable provider (Figure 4; 30, Figure 1A). Therefore, the data filter is coupled to a text-to-image converter (42, Figure 1A) for converting filtered data into a set of digital images, the set of digital images being defined as a set of texture maps [0027]. Leftwich also describes the use of a set-top box [0021].

It would have been obvious to one of ordinary skill in this art at the time of invention by applicant to modify the device of Wishoff to include a data filter coupled to a text-to-image converter for converting filtered data into a set of digital images, the set of digital images being defined as a set of texture maps as suggested by Leftwich because Leftwich suggests that there is an increasingly important dual need among users to both screen out unwanted programming and find desired programming. As the number of programs/events accessible increases, these issues will become even more important and strategies such as simple program ratings will not be effective or efficient enough to handle these interrelated user needs [0007]. Leftwich also

suggests that in order to create an electronic program guide, the data must be converted into digital images [0027].

16. With regard to Claim 2, Wishoff describes that a graphic application requires a certain amount of graphic memory (234, Figure 6; Col. 5, line 66-Col. 6, line 2), and inherently, this amount of graphic memory is needed to store a total size of the set of texture maps, which is a sum of all texture map sizes.

17. With regard to Claim 3, Wishoff describes a processor executing a first logic in which the total size of the set of texture maps is less than or equal to a memory size (235, Figure 6; Col. 6, lines 2-7). The first logic is allocating available contiguous video memory (235, Figure 6). Wishoff describes a second logic if the total size of the set of texture maps is greater than the memory size (238, 242; Col. 6, lines 25-35), or greater than the available contiguous video memory. The second logic reallocates the video memory into non-contiguous video memory, so it divides the set of texture maps into at least two groups.

However, Wishoff does not teach that the processor is coupled to the data filter.

However, Leftwich describes a data filter [0028], as discussed in the rejection for Claim 1.

18. With regard to Claim 4, Wishoff describes a best fit memory allocation scheme, which involves finding the piece of memory closest to the size of the allocation request (237, Figure 6; Col. 6, lines 14-24). Therefore, a total size of the first group is the largest possible sum of texture map sizes for which the total size of the first group is less than the memory size.

19. With regard to Claim 5, Wishoff describes allocating available contiguous video memory (235, Figure 6; Col. 6, lines 3-7) using a best fit memory allocation scheme (237; Col. 6, lines 14-24), as discussed in the rejection for Claim 4. After performing this step, if sufficient video memory does not exist (238; Col. 6, lines 25-32), or there are still texture maps that do not fit into the available contiguous video memory, then the memory manager reallocates video memory (242; Col. 6, lines 32-35) to non-contiguous video memory, or into two separate groups of memory. Therefore, the set of texture maps of the second group is stored in a second memory and a total size of the second group is the difference between the total size of the set of texture maps and the total size of the first group.

20. With regard to Claim 6, Wishoff describes that the set of texture maps of the first group is stored in a first memory (235, Figure 6; Col. 6, lines 2-7).

21. With regard to Claim 7, Wishoff describes that the set of texture maps of the second group is stored in a second memory, as discussed in the rejection for Claim 5.

22. Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wishoff (US006300962B1) in view of Leftwich (US 20030037336A1), further in view of Kenworthy (US005852443A).

23. With regard to Claim 8, Wishoff and Leftwich are relied upon for the teachings as discussed above relative to Claim 3.

However, Wishoff and Leftwich do not teach that the set of texture maps of the second group are compressed to fit into the first memory. However, Kenworthy describes the use of a set-top box (Col. 6, lines 10-15) and that the set of texture maps are compressed to fit into one memory (216, Figure 4A; Col. 9, lines 36-39; Col. 12, lines 8-13).

It would have been obvious to one of ordinary skill in this art at the time of invention by applicant to modify the devices of Wishoff and Leftwich so that the set of texture maps of the second group are compressed to fit into the first memory as suggested by Kenworthy because Kenworthy suggests that image compression technology has the advantage of reducing the use of costly memories for high performance systems (Col. 7, lines 43-55).

24. With regard to Claim 9, Wishoff and Leftwich do not teach a compression engine. However, Kenworthy describes a compression engine (414, Figure 9A; Col. 19, lines 26-29).

It would have been obvious to one of ordinary skill in this art at the time of invention by applicant to modify the devices of Wishoff and Leftwich to include a compression engine as suggested by Kenworthy because Kenworthy suggests that a compression engine is needed in order to perform image compression (Col. 19, lines 26-29), and the advantages of image compression were discussed in the rejection for Claim 8.

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25. Claim 15 rejected under 35 U.S.C. 103(a) as being unpatentable over Wishoff (US006300962B1) in view of Behrbaum (US006326973B1), further in view of Hicok (US006266753B1).

Wishoff is relied upon for the teachings as discussed above relative to Claim 14.

However, Wishoff does not teach that the method further comprises compressing the second group of texture maps to fit into C memory if B memory is not available. However, Behrbaum describes shifting as much texture data as possible from local graphic memory (C memory) to system memory (B memory) (Col. 4, lines 5-34).

It would have been obvious to one of ordinary skill in the art at the time of invention by applicant to modify the device of Wishoff so that the method further comprises shifting as much texture data as possible from local graphic memory (C memory) to system memory (B memory) as suggested by Behrbaum because Behrbaum suggests many advantages. One advantage is that the system memory has a well-cached host processor which has much lower memory bandwidth requirements than does a 3-D rendering machine. Texture access comprises perhaps the single largest component of rendering memory bandwidth, so avoiding loading or caching textures in local graphics memory saves bandwidth (Col. 4, lines 5-34).

However, Wishoff and Behrbaum do not teach that the method further comprises compressing the second group of texture maps to fit into C memory if B memory is not available. However, Hicok describes compressing texture data (Col. 9, lines 64-66) and dynamic load balancing between local media memory (C memory, 410, Figure 4) and system memory (B memory, 420) (Col. 3, line 60-Col. 4, line 11). Behrbaum describes shifting as much texture data as possible from local graphic memory (C memory) to system memory (B memory) (Col. 4, lines

5-34), so combining Behrbaum and Hicok, when no more system memory (B memory) is available, the second group of texture maps are compressed to fit into the local graphic memory (C memory).

It would have been obvious to one of ordinary skill in the art at the time of invention by applicant to modify the devices of Wishoff and Behrbaum so that the method further comprises compressing the second group of texture maps to fit into C memory if B memory is not available as suggested by Hicok because Hicok suggests that compressing the texture maps is advantageous for both bandwidth and memory size issues (Col. 5, lines 14-20).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joni Hsu whose telephone number is 703-305-4418. The examiner can normally be reached on M-F 8am-5pm.

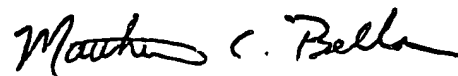
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew C. Bella can be reached on 703-308-6829. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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A handwritten signature in black ink, reading "Matthew C. Bella". The signature is fluid and cursive, with the first name "Matthew" being more prominent than the last name "Bella".

MATTHEW C. BELLA
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600